

RECOVERY BOILER REPORT FROM BRAZIL

Written by Guido Schreiber

Number of Recovery Boilers: In Brazil we have now 31 recovery boilers installed. One had construction stopped, and two are out-of-service. Therefore it totals 28 boilers in operating condition in the year 2000.

Attached to the minutes is a list of the boilers that our committee has compiled. Besides the boiler manufacturer name, it also has the Start-up Year, Capacity in Metric Tons of dry solids per day, Steam Pressure in kg/cm², Steam Temperature in Celsius, Steam Flow in Metric Tons per hour and Furnace Area in m².

Operational Data : The total black liquor firing capacity of these 28 boilers is 27,103 MT ds/day (59.6 million lbs ds/day) which results in an average boiler burning capacity of 968 MTds/day (2.1 million lbs ds/day). The present age average of the operable boilers is 14.6 years.

Official Installation of the New Committee: In October 1999, during the 32nd Annual Congress of the Brazilian Technical Pulp and Paper Association, the new **Brazilian Recovery Boiler Safety Committee** was officially installed in São Paulo. Its main purpose is to avoid explosions in recovery furnaces. Therefore the Committee was divided in four Sub-Committees, named Emergency Shutdown, Maintenance, Personnel Safety and safe Combustion. The group had elected. Fernando Paoliello as President and. Guido Schreiber as Vice-President.

The Committee meets every three months officially in São Paulo. The Sub-Committees, total of 24 members, have their independent work groups on continuous basis, with 6 members each, as pulp mill representatives.

Questionnaires from BLRBAC were translated to Portuguese, adapted to metric units and distributed to all pulp and paper mills. Efforts continue to convince the mills to immediately report their incidents filling out the respective forms.

Recovery Boiler Incidents in Brazil Reported during 1999: Five incidents are described:

Incident No.1: IGARAS Papeis e Embalagens S/A
Otacílio Costa, Santa Catarina State
Unit #4,CBC/Mitsubishi, 1998
1,100 MT /day, 105 kg/cm², 483°C
April 8, 1999
Generating bank tube failure
Total outage- 45.8 hrs

The interlock protection of the ash conveyor alarmed, stopping the drag system and the rotating valves of the economizer and generating bank. Salt cake was very compact and had

high humidity. Furnace did not black out; no significant differences between steam/water flow were noticed; drum level stayed normal; Oxygen analyser showed ranges from 2.5 to 3.0 %. Thirty minutes after the interlocked alarmed a leak was observed in the lower generating bank. The leak was developed at a circumferential weld connection between the tube and the header. Boiler was stopped following normal shutdown procedure. The incident was classified as not critical.

Incident No.2 : RIPASA S/A CELULOSE E PAPEL

Limeira, São Paulo State
Unit A, Gotaverken, 1973
510 MT/day, 42 kg/cm², 400°C
April 15, 1999
Upper furnace wall tube dent
Total outage- 00 hrs

Sootblower in the upper furnace was projected against the side wall due to bolts that failed. No leaks were seen, boiler stayed in observation but on line. The incident was classified as not critical.

Incident No.3: VCP-Votorantim Celulose e Papel

Luiz Antonio, São Paulo State
CE-CBC, 1991
1400 MT/day, 67 kg/cm², 450°C
April 21, 1999
Economizer tube leak
Total outage- 38 hrs

A leak was detected at a tube, the 3rd from the left to the right side, between the upper and lower headers at the economizer, in the direction of the exit gas passage. The leak was found to be at the welding point between the tube and the economizer holder that supports the exit gas flange. Unit was shutdown on normal procedure. The incident was classified as not critical.

Incident No.4: COCELPA Celulose e Papel do Paraná

Araucária, Paraná State
Gotaverken, 1985
210 MT/day, 45 kg/cm², 425°C
April 20, 1999
Screen tube crack
Total outage- 36 hrs

Screen tube ruptured spraying water against the furnace ceiling. All the water and steam was sucked to the precipitators due to high induced draft. The cause of the rupture was attributed to a crack resultant from a bad weld job. Boiler was shutdown following the normal procedure. Incident was classified as critical exposure.

Incident No.5: ARACRUZ CELULOSE S/A

Aracruz, Espirito Santo State

Unit C, Ahlstrom, 1997

2200 MT/day, 64kg/cm², 455°C

August 24, 1999

Suspected tube leak

Total outage: 80.5 hrs

A blackout was noted at the lower left corner of the rear wall. No.5 smelt spout was plugging up very frequently during the last 12 hours. No.4 smelt spout was not running satisfactorily either. Strange noise was heard next to No.6 fuel oil burner. Suspect of a tube leak was the main concern. The following instrument information was normal: steam/water flow difference; ID fans speed; Oxygen concentration. The Operator, after 15 minutes of investigation, following the initial strange noise, ESP'd the unit. Hydrostatic tests and careful inspection were made but no leaks were found. A secondary air damper in a malfunctioning state was found to be the cause of the strange noise. The incident was classified as not critical.